RESIDENTIAL ELECTRIC WATER HEATER

OWNER'S MANUAL

ELECTRIC

Thank you for buying this water heater from A.O. Smith Water Products Company. We appreciate your confidence in our products.

Please read through this informative manual and pay special attention to the following:

GENERAL SAFETY INFORMATION

CAUTION

TEXT PRINTED OR OUTLINED IN RED CONTAINS INFORMATION RELATIVE TO YOUR SAFETY. PLEASE READ THOROUGHLY BEFORE INSTALLING AND USING THIS APPLIANCE.

EXTERNAL DAMAGE

Do not operate the water heater until it has been fully checked out by a qualified service technician, if the water heater:

- Has been exposed to fire or damage.
- Produces steam or unusually hot water.

If the water heater has been subject to flooding, it must be replaced.

INSULATION BLANKETS

Insulation blankets available to the general public for external use on electric water heaters are not necessary with A. O. Smith water heater. The purpose of an insulation blanket is to reduce the standby heat loss encountered with storage tank water heaters. Your A. O. Smith water heater meets or exceeds the National Appliance Energy Conservation Act standards with respect to insulation and standby loss requirements, making an insulation blanket unnecessary.

WARNING

Should you choose to apply an insulation blanket to this heater, you should follow these instructions (See Figure 1 for identification of components mentioned below). Failure to follow these instructions can result in fire, asphyxiation, serious personal injury or death.

- Do not cover the temperature & pressure relief (T&P) valve.
- Do not cover the instruction manual. Keep it on the side of the water heater or nearby for future reference.
- Do obtain new warning and instruction labels from A.O. Smith for placement on the blanket directly over the existing labels.

EXTENDED NON-USE PERIODS

WARNING

Hydrogen gas can be produced in a hot water system served by this heater that has not been used for a long period of time (generally two weeks or more). HYDROGEN GAS IS EXTREMELY FLAMMABLE. To reduce the risk of injury under these conditions, it is recommended that the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. If hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. THERE SHOULD BE NO SMOKING OR OPEN FLAME NEAR THE FAUCET AT THE TIME IT IS OPEN.

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A.O. SMITH
WATER PRODUCTS COMPANY
A DIVISION OF A.O. SMITH CORPORATION
WWW.HOTWATER.COM

KEEP THIS MANUAL IN THE POCKET ON HEATER FOR FUTURE REFERENCE WHENEVER MAINTENANCE ADJUSTMENT OR SERVICE IS REQUIRED.

PRINTED IN THE U.S.A. 0903

PART NO. 184551-000
SUPERSEDES PART NO. 183795-000

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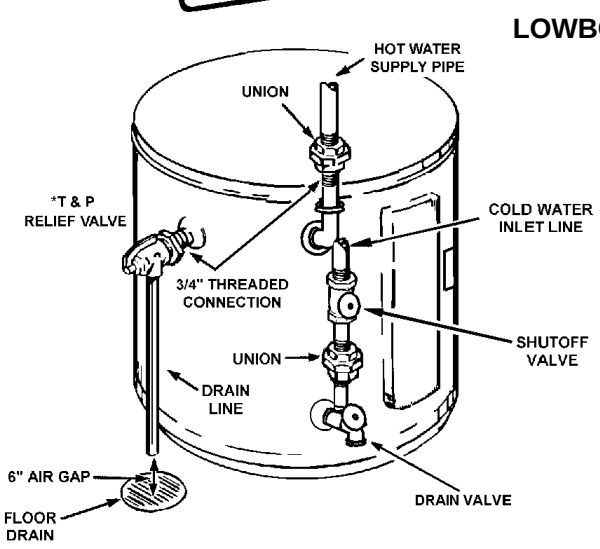
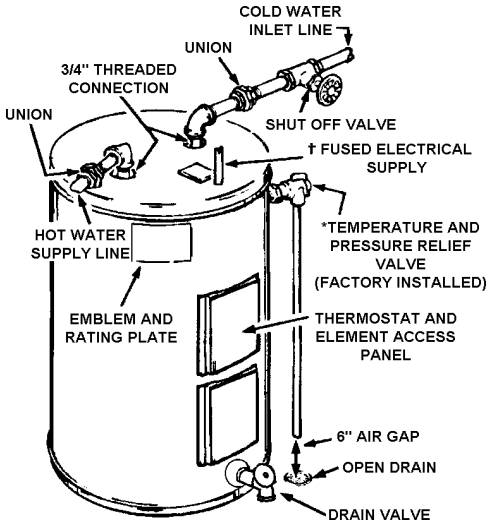
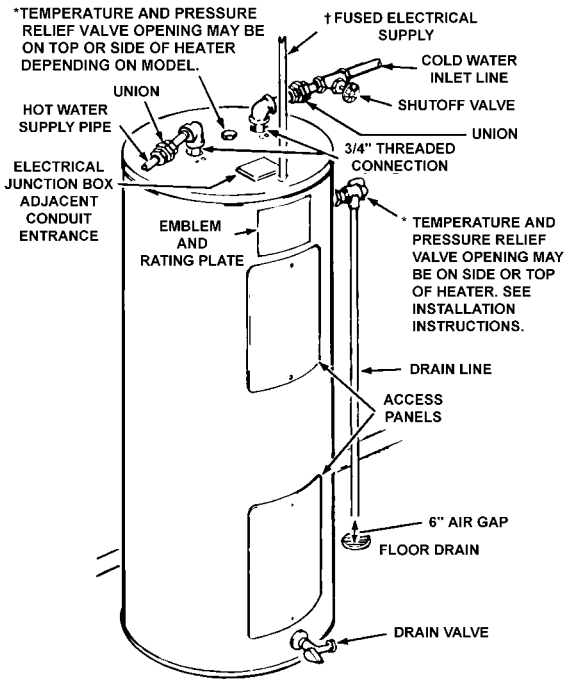
GET TO KNOW YOUR WATER HEATER

LOWBOYS

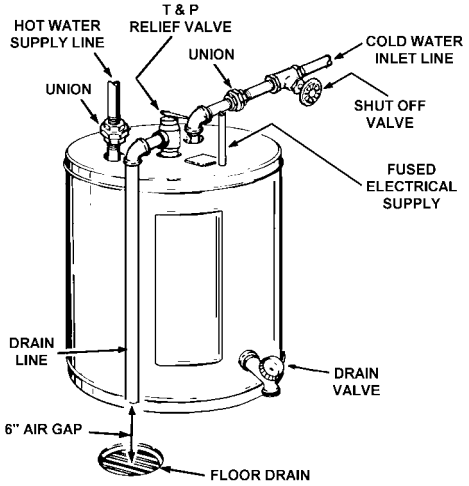




UPRIGHTS

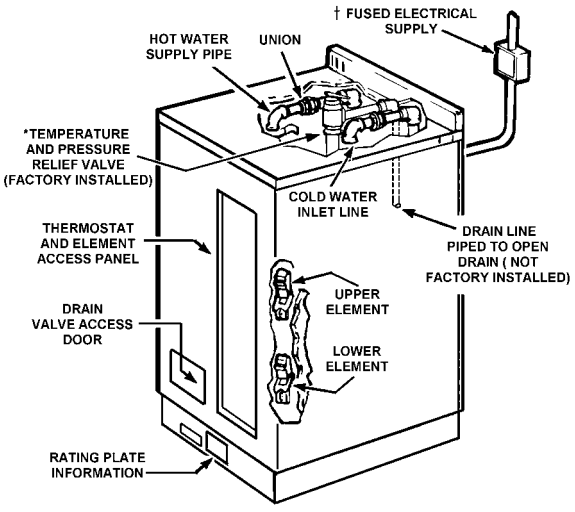

*TEMPERATURE AND PRESSURE RELIEF VALVE OPENING MAY BE ON TOP OR SIDE OF HEATER DEPENDING ON MODEL.
† FUSED ELECTRICAL SUPPLY
COLD WATER INLET LINE
UNION
HOT WATER SUPPLY PIPE
SHUTOFF VALVE
UNION
3/4" THREADED CONNECTION
ELECTRICAL JUNCTION BOX ADJACENT CONDUIT ENTRANCE
EMBLEM AND RATING PLATE
* TEMPERATURE AND PRESSURE RELIEF VALVE OPENING MAY BE ON SIDE OR TOP OF HEATER. SEE INSTALLATION INSTRUCTIONS.
DRAIN LINE
ACCESS PANELS
6" AIR GAP
FLOOR DRAIN
DRAIN VALVE

POINT OF USE HEATERS



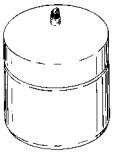
†† MODEL ELJF - 2 & 4

TABLE TOPS


† FUSED ELECTRICAL SUPPLY
HOT WATER SUPPLY PIPE
UNION
*TEMPERATURE AND PRESSURE RELIEF VALVE (FACTORY INSTALLED)
COLD WATER INLET LINE
DRAIN LINE PIPED TO OPEN DRAIN (NOT FACTORY INSTALLED)
THERMOSTAT AND ELEMENT ACCESS PANEL
UPPER ELEMENT
DRAIN VALVE ACCESS DOOR
LOWER ELEMENT
RATING PLATE INFORMATION

INSTALL SUITABLE DRAIN PANS UNDER HEATERS TO PREVENT DAMAGE DUE TO LEAKAGE. REFER TO WATER HEATER LOCATION ON PAGE 3.

INSTALL VACUUM RELIEF IN COLD WATER INLET LINE AS REQUIRED BY LOCAL CODES.



INSTALL THERMAL EXPANSION TANK OR DEVICE IF WATER HEATER IS INSTALLED IN A CLOSED WATER SYSTEM.

FIGURE 1

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INSTALLATION

⚠ WARNING

FOR CALIFORNIA INSTALLATION THIS WATER HEATER MUST BE BRACED, ANCHORED, OR STRAPPED TO AVOID FALLING OR MOVING DURING AN EARTHQUAKE. SEE INSTRUCTIONS FOR CORRECT INSTALLATION PROCEDURES. INSTRUCTIONS MAY BE OBTAINED FROM YOUR LOCAL DEALER, WHOLESALER, PUBLIC UTILITIES OR CALIFORNIA'S OFFICE OF THE STATE ARCHITECT, 400 P STREET, SACRAMENTO, CA 95814.

REQUIRED ABILITY

INSTALLATION OR SERVICE OF THIS WATER HEATER REQUIRES ABILITY EQUIVALENT TO THAT OF A LICENSED TRADESMAN IN THE FIELD INVOLVED. PLUMBING AND ELECTRICAL WORK ARE REQUIRED.

GENERAL

The installation must conform to these instructions, the local code authority having jurisdiction, and the requirements of the power company. In the absence of code requirements follow NFPA-70 (current edition), The National Electrical Code which may be ordered from: National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269.

WATER HEATER LOCATION

A minimum clearance of 4" must be allowed for access to replaceable parts such as the thermostats, drain valve and relief valve.

Adequate clearance for servicing this appliance should be considered before installation, such as changing the anodes, etc.

The water heater should be located as close to or centralized to the water piping system as possible. The water heater should be located in an area not subject to freezing temperatures.

⚠ CAUTION

THE HEATER SHOULD BE LOCATED IN AN AREA WHERE LEAKAGE OF THE TANK OR CONNECTIONS WILL NOT RESULT IN DAMAGE TO THE AREA ADJACENT TO THE HEATER OR TO LOWER FLOORS OF THE STRUCTURE. When such locations cannot be avoided, a suitable drain pan piped to an adequate drain should be installed under the heater. Such pans should have a minimum length and width of at least 2 inches greater than the diameter of the heater and should be piped to an adequate drain. Drain pans suitable for these heaters are available from your distributor or Water Products Company, 5621 W. 115th Street, Alsip, IL 60803, or at www.hotwater.com/parts.

Under no circumstances is the manufacturer to be held liable for any water damage in connection with this water heater.

HEATERS WITHOUT DRAIN VALVES:

For convenience of service, it is recommended that a drain valve be installed in the inlet piping, as close to the heater as possible, see page 2.

⚠ WARNING

AN ELECTRICAL GROUND IS REQUIRED TO REDUCE RISK OF ELECTRIC SHOCK OR POSSIBLE ELECTROCUTION. THE GROUND SCREW AT THE JUNCTION BOX IS FOR BONDING THE HEATER TO A GROUNDED SERVICE ENTRANCE CONDUCTOR, A GROUNDED SERVICE ENTRANCE RACEWAY, OR AN EARTH GROUNDING ELECTRODE CONDUCTOR.

WATER CONNECTIONS

See page 2 for typical installation. Make sure a suitable pipe thread sealant is used to prevent leakage.

TEMPERATURE AND PRESSURE RELIEF VALVE

A NEW TEMPERATURE AND PRESSURE RELIEF VALVE COMPLYING WITH THE STANDARD FOR RELIEF VALVES FOR HOT WATER SUPPLY SYSTEMS, ANSI Z21.22 MUST BE INSTALLED IN THE HEATER IN THE MARKED OPENING PROVIDED. THE VALVE MUST BE OF A SIZE (INPUT RATING) THAT WILL BE ADEQUATE FOR YOUR SIZE HEATER.

Check the metal tag on the relief valve and compare it to the heater's rating plate. The pressure rating of the relief valve must not exceed the working pressure shown on the rating plate of the heater and the hourly Btu rated temperature steam discharge capacity of the relief valve shall not be less than the input rating of the heater. (Watts x 3.415 = Btu/hr. rate) NO VALVE IS TO BE PLACED BETWEEN THE RELIEF VALVE AND TANK. DO NOT PLUG THE RELIEF VALVE.

The drain line connected to this valve must not contain a reducing coupling or other restriction and should terminate near a suitable drain to prevent water damage during valve operation. Discharge line shall be installed to allow complete drainage of both the valve and line. DO NOT THREAD, PLUG OR CAP THE END OF THE DRAIN LINE.

CLOSED WATER SYSTEM

A closed system will exist if a back-flow preventer (check valve), pressure reducing valve, or other similar device is installed in the cold water line between the water heater and the street main (or well). Excessive pressure may develop due to the thermal expansion of heated water causing premature tank failure or intermittent relief valve operation. This type of failure is not covered by the limited warranty. An expansion tank or device may be necessary in the cold water supply to alleviate this situation, see page 2. Contact the local plumbing authority.

PIPE INSULATION - (SELECTED MODELS)

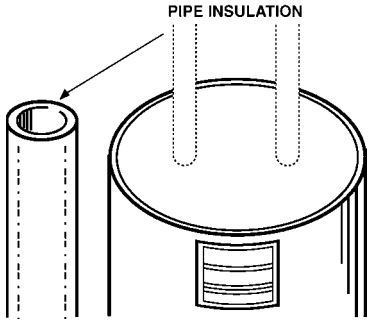

FIGURE 2

1. Remove pipe insulation from carton.
2. Fit pipe insulation over the incoming cold water line and the hot water line. Make sure that the insulation is against top cover of the heater.

ELECTRICAL CONNECTIONS

The heater internal wiring conforms with one of the diagrams on page 4. The heater data plate identifies this wiring by designation in the space marked CIRCUIT. The voltage and wattage ratings are also shown on the plate.

REMOVING PANELS FROM TABLE TOP MODELS

The drain valve, electrical components and wiring leads are situated behind the two front covers (See page 2):

⚠ DANGER

1. Turn off the heater electrical supply.
2. For access to the thermostat and elements remove the two screws on the tall front cover located on the right side facing the unit, then remove cover. Then open the flap of installation to expose the thermostat and element.
3. For access to the drain valve remove the one screw in the smaller access door located in the bottom left hand side of the front panel.
4. To remove the top panel grasp the back splash and pull towards the front sliding it toward you.

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WIRING DIAGRAMS

DANGER: TURN OFF THE HEATER ELECTRICAL SUPPLY BEFORE SERVICING ANY ELECTRICAL COMPONENTS.

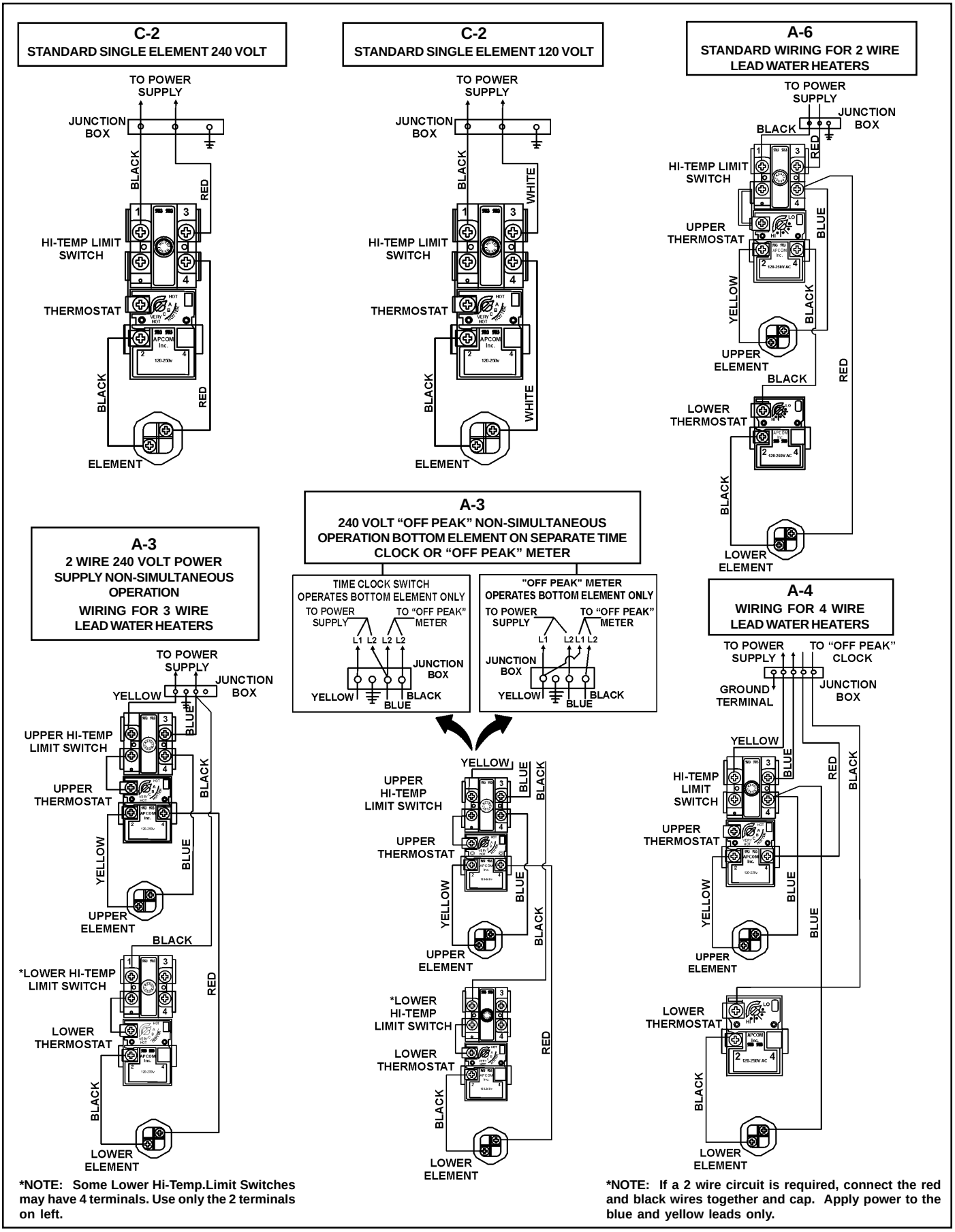

FIGURE 3

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OPERATION

CAUTION

NEVER OPERATE THE HEATER WITH THE COLD WATER INLET VALVE CLOSED OR WITHOUT FILLING WITH WATER PER THE FILLING INSTRUCTIONS. FAILURE TO DO SO WILL CAUSE DAMAGE AND CAN VOID ELEMENT WARRANTY.

FILLING

1. Close the water heater drain valve. (Turn clockwise ↷).
2. Open a nearby hot water faucet to permit air to escape.
3. Fully open the cold water inlet valve, filling the heater and piping.
4. Close the hot water faucet when water flows.
5. Turn the water heater electrical switch on.

TEMPERATURE REGULATION

DANGER

THE WATER HEATER IS EQUIPPED WITH AN ADJUSTABLE THERMOSTAT OR THERMOSTATS TO CONTROL WATER TEMPERATURE. HOT WATER AT TEMPERATURES DESIRED FOR AUTOMATIC DISHWASHER AND LAUNDRY USE CAN CAUSE SCALDS RESULTING IN SERIOUS PERSONAL INJURY AND/OR DEATH. THE TEMPERATURE AT WHICH INJURY OCCURS VARIES WITH THE PERSON'S AGE AND TIME OF EXPOSURE. THE SLOWER RESPONSE TIME OF CHILDREN, AGED OR DISABLED PERSONS INCREASES THE HAZARD TO THEM. NEVER ALLOW SMALL CHILDREN TO USE A HOT WATER TAP, OR TO DRAW THEIR OWN BATH WATER. NEVER LEAVE A CHILD OR DISABLED PERSON UNATTENDED IN A BATHTUB OR SHOWER.

It is recommended that lower water temperatures be used to avoid the risk of scalding. It is further recommended, in all cases, that the water temperature thermostats (See Figure 4) be set for the lowest temperature which satisfies your hot water needs. This will also provide the most energy efficient operation of the water heater. Thermostat(s) are factory set at 120°F (49°C) unless specified differently by state requirements.

KEEPING THE THERMOSTAT SETTING AT 120°F WILL REDUCE THE RISK OF SCALDS.

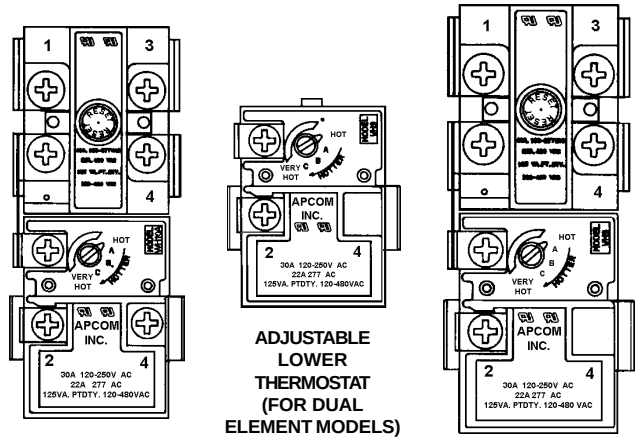
Figure 4 shows the approximate time-to-burn relationship for normal adult skin. The thermostats on your water heater have a linear relationship between degrees of angular rotation and the corresponding change in temperature. Thus rotating the temperature adjustment indicator 40 angular degrees will result in a 10 degree Fahrenheit change in water temperature.

TEMPERATURE ADJUSTMENT

To change the temperature setting:

DANGER

1. Turn off the heater electrical supply. Do not attempt to adjust thermostat with power on.
2. Remove the thermostat access panels and covers from the thermostats. Do not remove the plastic personnel protectors covering the thermostats.
3. Using a flat tip screwdriver, rotate the adjusting knob to the desired temperature setting.
4. Replace the covers and access panels, and turn on heater electrical supply.



UPPER THERMOSTAT (DUAL ELEMENT MODELS ONLY)

ADJUSTABLE LOWER THERMOSTAT (FOR DUAL ELEMENT MODELS)

ADJUSTABLE LOWER THERMOSTAT WITH HIGH LIMIT

TEMPERATURE SETTINGS

HOT - Is a thermostat setting of approximately 120° F, which will supply hot water at the most economical temperatures..
A - Is a thermostat setting of approximately 130° F.
B - Is a thermostat setting of approximately 140° F.
C - Is a thermostat setting of approximately 150° F.
VERY HOT - Is a thermostat setting of approximately 160° F. It is recommended that the dial be set lower whenever possible.

Temperature Setting	Time to Produce 2nd & 3rd Degree Burns on Adult Skin
170° F	Nearly instantaneous
160° F	About 1/2 second
150° F	About 1-1/2 seconds
140° F	Less than 5 seconds
130° F	About 30 seconds
125° F	About 2 minutes
120° F	More than 5 minutes

FIGURE 4

Valves for reducing point-of-use temperature by mixing cold and hot water are available (see Figure 5). Also available are inexpensive devices that attach to faucets to limit hot water temperatures. Contact a licensed plumber or the local plumbing authority.

A non-adjustable high temperature limit control operates before steam temperatures are reached. The high limit is in the same area as the upper thermostat and must be reset manually when it operates. BECAUSE THE HIGH LIMIT OPERATES ONLY WHEN ABNORMALLY HIGH WATER TEMPERATURES ARE PRESENT, IT IS IMPORTANT THAT A QUALIFIED SERVICE AGENT BE CONTACTED TO DETERMINE THE REASON FOR OPERATION BEFORE RESETTING.

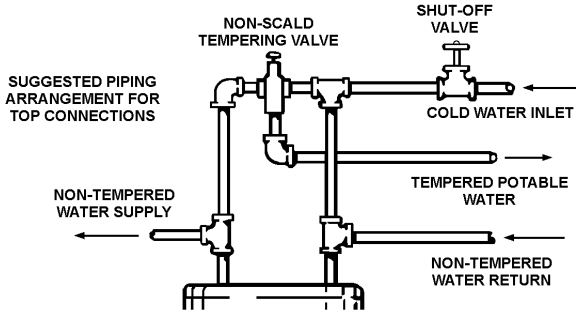


FIGURE 5

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MAINTENANCE

Electric water heater maintenance consists of cleaning the tank bottom and removing scale from the heating elements. Your dealer should be contacted for tank and element cleaning. In some instances a hissing sound may be heard as the scale builds up. This noise is normal although the scale should be removed.

Periodically the temperature and pressure relief valve should be checked to insure that it is in operating condition. Lift the lever at the top of the valve several times until the valve seats properly and operates freely.

RELIEF VALVE

The temperature/pressure (T&P) relief valve is rated at 210°F (99°C) and 150 psi (1034kPa). This valve is a safety device to protect against abnormally high temperature and pressures.

Never remove T&P valve from the tank and reinstall in the drain line. If replacement of the valve is needed, it must be replaced with the recommended valve and installed in its original location.

If the temperature/pressure relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation.

A thermal expansion tank may be needed to allow water to expand. Expansion tanks are available from A.O. Smith Water Products Company, 5621 W. 115th Street, Alsip, IL 60803. Inspect the unit for proper operation. Do not ignore the water discharge. Never plug the T&P relief valve.

DANGER

DANGER OF PERSONAL INJURY FROM SCALDING. WATER FROM T&P RELIEF VALVE MAY BE EXTREMELY HOT AND IS NOT TEMPERED. USE EXTREME CAUTION WHEN DISCHARGING VALVE. REPLACEMENT OF T&P VALVE SHOULD BE DONE BY A TRAINED PROFESSIONAL OR A LICENSED PLUMBING CONTRACTOR.

At least once a year, the temperature and pressure relief valve must be checked to ensure that it is in operating condition. Lift the lever at the top of the valve several times until the valve seats properly and operates freely.

If water does not flow, valve may be obstructed or corroded. Remove valve and inspect for corrosion. Have it replaced with the recommended valve if necessary.

Removal and inspection of the valve should be done every three years. Do not try to repair valve. Doing so will result in improper operation which may result in a tank explosion. In areas with poor water conditions, it may be necessary to remove and inspect the T&P valve more often than every three years.

ANODE ROD MAINTENANCE

The anode rod is used to protect the tank from corrosion. Water tanks are equipped with an anode rod. The submerged rod sacrifices itself to protect the tank. Instead of corroding the tank, water ions attack and eat away the anode rod. This does not affect the water's taste or color. The rod must be maintained to keep the tank in operating condition.

Anode deterioration depends on water conductivity, not necessarily water condition. It may be necessary to have the anode rod inspected a few times during the first year to see what effect the water has had. A corroded or pitted anode rod, in the first year, indicates high water conductivity and should be checked and or replaced more often than an anode rod that appears to be fairly clean. Inspection should be conducted by a qualified technician.

REPLACEMENT PARTS

Replacement parts may be ordered through dealers, authorized servicers or distributors. Refer to Yellow Pages for where to call or contact the Water Products Company, 5621 West 115th Street, Alsip, IL 60803, 1-800-433-2545. When ordering parts, specify complete model no., serial no., (see rating plate), quantity and name of part desired. Standard hardware items should be purchased locally.

TROUBLE SHOOTING ELECTRIC WATER HEATERS

PROBLEM	CAUSE	SOLUTION
WATER LEAKS (SEE LEAKAGE CHECKPOINTS ON PAGE 10	IMPROPERLY SEALED HOT OR COLD SUPPLY CONNECTIONS, RELIEF VALVE OR THERMOSTAT THREADS	TIGHTEN THREADED CONNECTIONS
	LEAKAGE FROM OTHER APPLIANCES OR WATER LINES	INSPECT OTHER APPLIANCES NEAR WATER HEATER
LEAKING TEMPERATURE & PRESSURE RELIEF VALVE	THERMAL EXPANSION IN CLOSED WATER SYSTEM	INSTALL THERMAL EXPANSION TANK (DO NOT PLUG T & P RELIEF VALVE)
	IMPROPERLY SEATED VALVE	CHECK RELIEF VALVE FOR PROPER OPERATION
HOT WATER ODORS (CAUTION: UNAUTHORIZED REMOVAL OF THE ANODE(S) WILL VOID THE WARRANTY. FOR FURTHER INFORMATION, CONTACT YOUR DEALER.)	HIGH SULFATE OR MINERAL CONTENT IN WATER SUPPLY	DRAIN AND FLUSH HEATER THOROUGHLY, AND REFILL
	BACTERIA IN WATER SUPPLY	CHLORINATE WATER SUPPLY
NOT ENOUGH OR NO HOT WATER	POWER SUPPLY TO HEATER IS NOT ON	TURN DISCONNECT SWITCH ON OR CONTACT ELECTRICIAN
	THERMOSTAT SET TOO LOW	REFER TO TEMPERATURE REGULATION
	HEATER UNDERSIZED	REDUCE HOT WATER USE
	INCOMING WATER IS UNUSUALLY COLD (WINTER)	ALLOW MORE TIME FOR HEATER TO REHEAT
	LEAKING HOT WATER FROM PIPES OR FIXTURES	HAVE PLUMBER CHECK AND REPAIR LEAKS
	HIGH TEMPERATURE LIMIT SWITCH ACTIVATED	CONTACT DEALER TO DETERMINE CAUSE: SEE TEMPERATURE REGULATION
WATER TOO HOT	THERMOSTAT SET TOO HIGH	REFER TO TEMPERATURE REGULATION
	HIGH TEMPERATURE LIMIT SWITCH ACTIVATED	CONTACT DEALER TO DETERMINE CAUSE: SEE TEMPERATURE REGULATION
WATER HEATER SOUNDS	SCALE ACCUMULATION ON ELEMENTS	CONTACT DEALER TO CLEAN OR REPLACE ELEMENTS
	SEDIMENT BUILD-UP ON TANK BOTTOM	DRAIN & FLUSH THOROUGHLY

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INSTALLING THE POINT OF USE WATER HEATER

(SEE PAGE 2 FOR TYPICAL INSTALLATIONS)

OPTIONAL WALL MOUNTING

WARNING

WALL CONSTRUCTION AT THE POINT OF THE WATER HEATER INSTALLATION MUST BE CAPABLE OF SUPPORTING AT LEAST 200 POUNDS.

As an example: if the water heater is to be installed on a wall of gypsum board (dry wall) or other material not capable of supporting the water heater filled with water, additional bracing will be necessary. Two possibilities are shown in Figure 6 below.

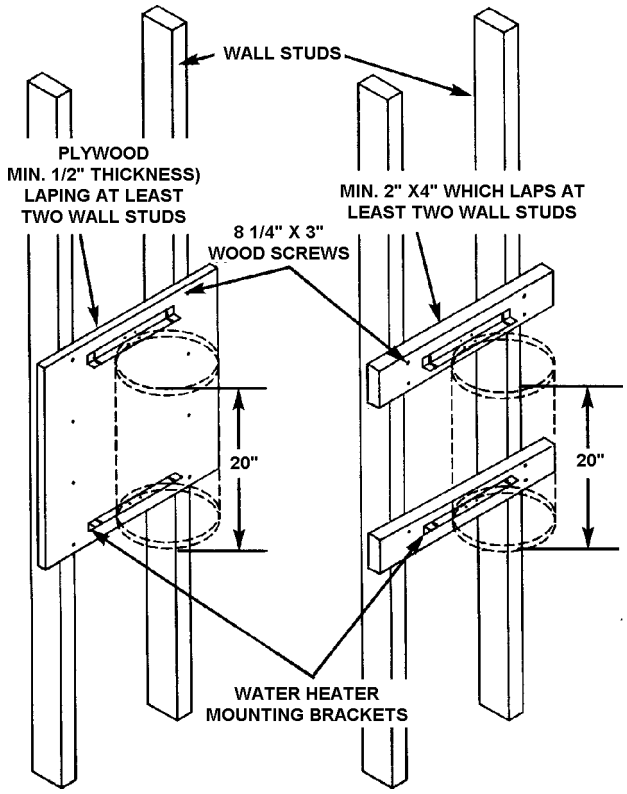

FIGURE 6

1. Using two sheet metal screws supplied, secure the top mounting bracket to the top of the water heater.

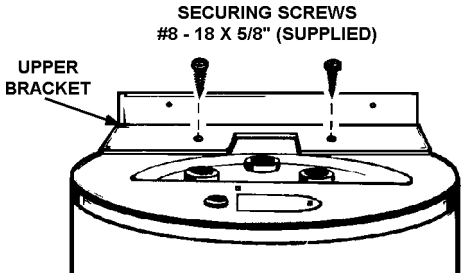

FIGURE 7

2. Using the remaining two sheet metal screws provided, secure the bottom mounting bracket to the bottom of the water heater.

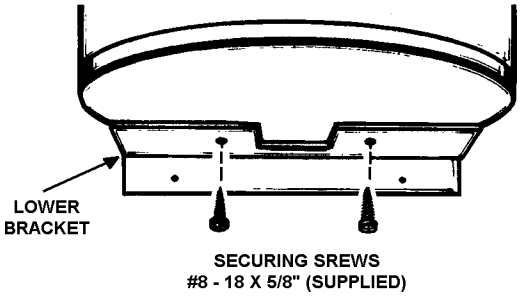

FIGURE 8

3. Determine the location on the wall, and then the height above the floor which the wall securing bracket will be placed. Using adequate screws, or nuts, and bolts (not supplied) fasten the wall securing bracket to the wall.

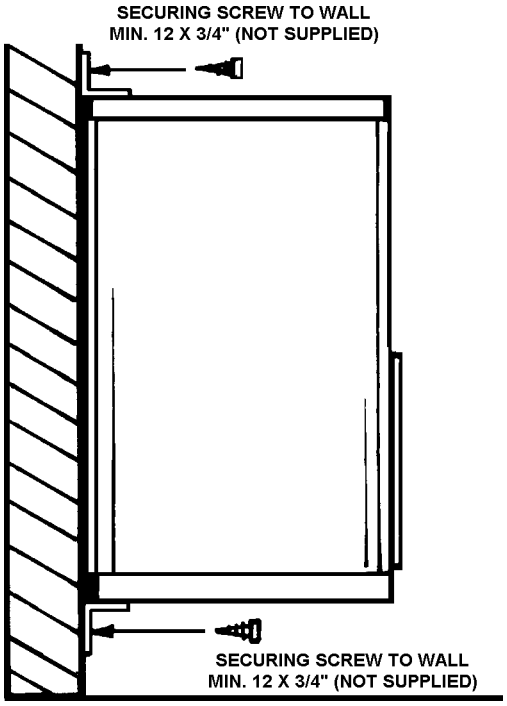

FIGURE 9

For more information not listed in this section please referee to sections on pages 3, 5 and 6. One must read all sections listed below in this manual to insure your heater is installed correctly.

INSTALLATION
REQUIRED ABILITY
GENERAL
WATER HEATER LOCATION
WATER CONNECTIONS
TEMPERATURE AND PRESSURE RELIEF VALVE
CLOSED WATER SYSTEM
ELECTRICAL CONNECTIONS
OPERATION
FILLING
MAINTENANCE
RELIEF VALVE
ANODE RODE MAINTENANCE

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OPTIONAL CORD SET WIRING
(120 VOLT AND 240 VOLT)

There may be a cord set supplied with the water heater at the time of manufacture. If not, one can be ordered through the Parts Department, see "Repair Parts" section. Refer to figure 10 below.

WIRING DIAGRAMS

DANGER

TURN OFF THE HEATER ELECTRICAL SUPPLY BEFORE SERVICING ANY ELECTRICAL COMPONENTS.

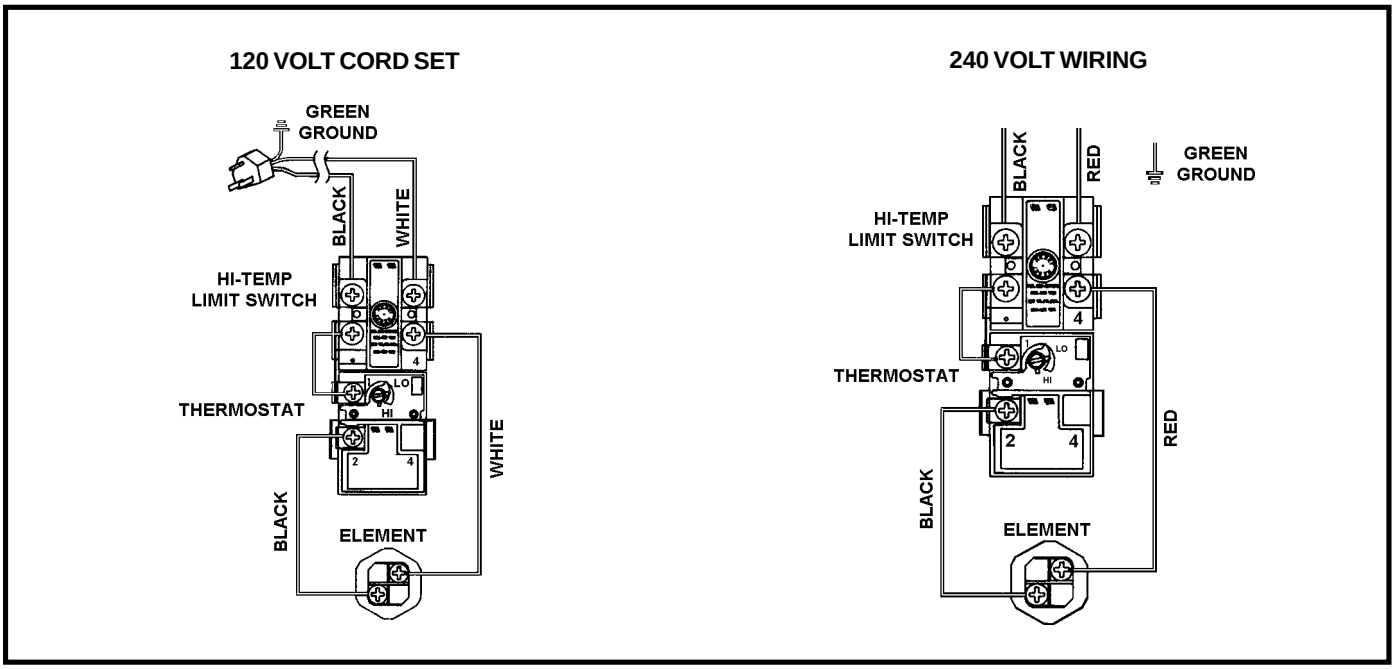

FIGURE 10

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POINT OF USE WATER HEATER OPERATION

⚠ CAUTION

NEVER OPERATE THE HEATER WITH THE COLD WATER INLET VALVE CLOSED OR WITHOUT FILLING WITH WATER PER THE FILLING INSTRUCTIONS. FAILURE TO DO SO WILL CAUSE DAMAGE AND CAN VOID ELEMENT WARRANTY.

FILLING

1. Close the water heater drain valve. (Turn clockwise ↷).
2. Open a nearby hot water faucet to permit air to escape.
3. Fully open the cold water inlet valve, filling the heater and piping.
4. Close the hot water faucet when water flows.
5. Turn the water heater electrical switch on.

TEMPERATURE REGULATION

⚠ DANGER

THE WATER HEATER IS EQUIPPED WITH AN ADJUSTABLE THERMOSTAT TO CONTROL WATER TEMPERATURE. HOT WATER AT TEMPERATURES DESIRED FOR AUTOMATIC DISHWASHER AND LAUNDRY USE CAN CAUSE SCALDS RESULTING IN SERIOUS PERSONAL INJURY AND/OR DEATH. THE TEMPERATURE AT WHICH INJURY OCCURS VARIES WITH THE PERSON'S AGE AND TIME OF EXPOSURE. THE SLOWER RESPONSE TIME OF CHILDREN, AGED OR DISABLED PERSONS INCREASES THE HAZARD TO THEM. NEVER ALLOW SMALL CHILDREN TO USE A HOT WATER TAP, OR TO DRAW THEIR OWN BATH WATER. NEVER LEAVE A CHILD OR DISABLED PERSON UNATTENDED IN A BATHTUB OR SHOWER.

It is recommended that lower water temperatures be used to avoid the risk of scalding. It is further recommended, in all cases, that the water temperature thermostat (see Figure 11) be set for the lowest temperature which satisfies your hot water needs. This will also provide the most energy efficient operation of the water heater. Thermostat(s) are factory set at 120°F (49°C) unless specified differently by state requirements.

KEEPING THE THERMOSTAT SETTING AT 120°F WILL REDUCE THE RISK OF SCALDS.

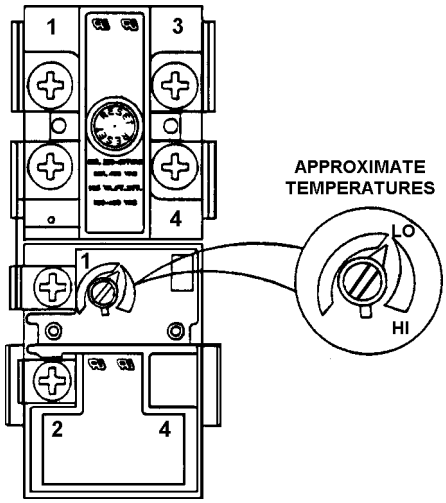
Figure 4, Page 5 shows the approximate time-to-burn relationship for normal adult skin. The thermostats on your water heater have a linear relationship between degrees of angular rotation and the corresponding change in temperature. Thus rotating the temperature adjustment indicator 30 angular degrees will result in a 10 degree Fahrenheit change in water temperature.

THERMOSTATS

⚠ WARNING

This special thermostat with Hi-Temp Limit Switch (Part No. 900239-4) can only be used with this water heater. Do not use any other thermostat with Hi-Temp Limit Switch.

The thermostat is factory set at "LO" which is approximately 120° F to reduce the risk of scald injury.



ADJUSTABLE THERMOSTAT
FIGURE 11

TEMPERATURE SETTINGS

Read all warnings in this manual and on the water heater before proceeding.

LO - Setting, approximately 120° F is recommended for all applications to reduce the risk of scald injury.

HI - Is a setting for the maximum temperature (approximately 140° F), which can be supplied by the water heater. The temperature dial should be kept at a lower setting whenever possible.

NOTE: Water temperature range of 120° F - 140° F recommended by most dishwasher manufacturers.

THERMOSTAT ADJUSTMENT

The thermostat is adjustable if a different water temperature is desired. Read all warnings in the "TEMPERATURE REGULATION" section before proceeding.

To adjust the temperature setting;

1. Turn "OFF" the electrical power to the water heater at junction box.

⚠ WARNING

HAZARD OF ELECTRICAL SHOCK! Before removing any access panels or servicing the water heater, make sure the electrical supply to the water heater is turned "OFF". Failure to do this could result in DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE.

2. Take "OFF" the access panel and fold away the insulation. Do not remove the plastic personal protector covering the thermostat.
3. Turn the water temperature dial clockwise (↷) to increase the temperature, or counter clockwise (↶) to decrease the temperatures.
4. Fold the insulation back in place and replace the access panel.
5. Turn "ON" the power supply.

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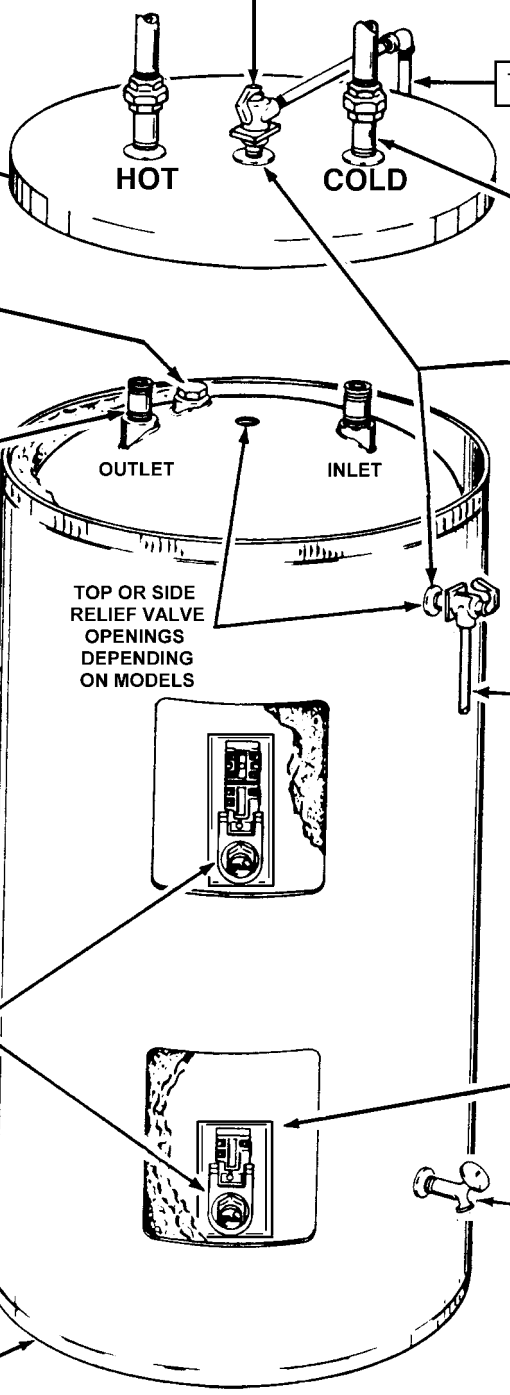
LEAKAGE CHECKPOINTS

INSTRUCTIONS: USE THIS ILLUSTRATION AS A GUIDE WHEN CHECKING FOR SOURCES OF WATER LEAKAGE. YOU OR YOUR DEALER MAY BE ABLE TO CORRECT WHAT APPEARS TO BE A PROBLEM.



Temperature & Pressure Relief Valve

Cover and Insulation shown removed to reveal tank top

To Open Drain

Condensation and dripping may appear on pipes when cold water temperature is low. Pipe fitting may be leaking.

Anode Rod

Where possible, remove or lift top cover to examine threads of fittings installed into tank for evidence of leakage. Correct fitting leaks as necessary.

Relief valve operation and leakage may be due to water expansion during heating cycle or foreign material on seat of valve. If the valve is not piped to an open drain the released water could be mistaken for a leaking heater. To check where threaded portion enters tank, insert Q-tip or similar absorbent material between jacket opening and valve to swab spud area. Remove valve* if leak is indicated and repair with pipe joint compound.

To Open Drain

Water leaks at the elements may be due to:

1. Defective element which leaks at terminals or thru flange. Replace element*.

2. Loose element/gasket leak:

   (a) Screw-in type: tighten with 1 1/2" socket wrench or Part No. 21163 or 23985 wrench. If leak continues, remove element*, discard gasket and clean thread areas. Apply non-hardening Permatex No. 2 to thread areas, install new gasket and screw element into fitting until it seats. Tighten 1/2 to 3/4 turn with wrench.

   (b) Flange type: tighten screws with wrench. If leak continues remove element* and discard gasket. Clean gasket seating areas and reinstall element with new gasket.

   NOTE: Part No. 40000-1 scale cleaning replacement screws available where threads have become rusted or damaged, preventing tightening.

Water on the side of the tank may be condensation due to the panel or insulation not being in place.

Drain valve leakage could be from the valve itself. Either correct the problem or replace the valve.* To check for leakage where threaded portion enters tank, insert Q-tip or similar absorbent material between jacket opening and valve to swab spud area. Remove valve* if leak is indicated and repair with pipe joint compound.

*Contact your dealer as it is necessary to shut off electricity and drain tank to perform procedure.

All water which appears at the heater bottom or on the surrounding floor may be caused by condensation, loose connections or relief valve operation and leakage. Do not replace the heater until a full inspection of all potential leak points is made and corrective steps taken to stop the leak. Leakage from other appliances, water lines or ground seepage should also be suspected until proven otherwise.

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LIMITED RESIDENTIAL ELECTRIC WARRANTY

THIS WARRANTY IS APPLICABLE TO THE ORIGINAL OWNER ONLY. If the glass lined tank in this water heater shall prove upon examination by A. O. Smith Corporation (the warrantor) to have leaked during the warranty period in normal residential use, due to natural corrosion from potable water therein, the warrantor will furnish the ORIGINAL OWNER a replacement A. O. Smith water heater of equivalent size and current model, or a replacement part for any thermostat which fails in normal use, in accordance with the warranty terms and conditions specified below. THE A. O. SMITH REPLACEMENT MODEL OR PART WILL BE WARRANTED FOR ONLY THE UNEXPIRED PORTION OF THE ORIGINAL WARRANTY. The warranty period will be determined by the original installation date of the water heater. PROOF-OF-PURCHASE AND PROOF-OF-INSTALLATION ARE NECESSARY TO VALIDATE THIS WARRANTY. This warranty is not transferable and applies to models listed below which are produced after March 1, 2000.

WARRANTY PERIODS

MODEL	TANK[1]	PARTS[2]
ELJF 2/4	1 YR	90 DAYS
EES / ESTT / ELF	6 YR	2 YR

When the water heater has been used for other than single family residential application; 1. The tank warranty shall be reduced to 1 year for 6 year models and 3 years for 10 year models. 2. The parts warranty shall be reduced to 1 year for models EES, ESTT and remain 90 days for model ELJF 2/4. Returned parts which meet any of the following conditions are not covered by this warranty: 1) improper installation or removal, 2) damaged by other than normal wear, 3) replaced for cosmetic purposes, or 4) returned with defaced date codes.

CONDITIONS AND EXCEPTIONS

This warranty shall apply only when the water heater is installed and operated in accordance with 1) all local fire codes and plumbing codes, ordinances and regulations, 2) the printed instructions provided with it, 3) good industry practices, and 4) proper safety practices such as but not limited to a properly sized drain pan if installed in an area where leakage from connections of the tank would result in damage to the area adjacent to the heater. In addition, a new temperature and pressure relief valve, certified by the American Gas Association must have been properly installed and piped to the nearest drain.

This warranty shall apply only when the heater is:

- owned by the original purchaser;
- used at temperatures not exceeding the maximum calibrated setting of its thermostat;
- used at water pressure not exceeding the working pressure shown on the heater;
- filled with potable water, free to circulate at all times and with the tank free of damaging water sediment or scale deposits;
- used in a non-corrosive and non-contaminated atmosphere;
- used with factory approved anode(s) installed;
- in its original installation location;
- in the United States, its territories or possessions, and Canada;
- sized in accordance with proper sizing techniques for residential water heaters;
- bearing a rating plate which has not been altered, defaced or removed except as required by the warrantor;
- not used in a closed system without a properly sized and installed thermal expansion tank or device;
- fired at the proper voltage and wattage.
- maintained in accordance with the instructions printed in the manual included with the heater.

Any accident to the water heater or any part thereof (including freezing, fire, floods, or lightning), any misuse, abuse or alteration of it, any operation of it in a modified form, or any attempt to repair tank leaks or parts, will void this warranty.

SERVICE AND LABOR RESPONSIBILITY

UNDER THIS LIMITED WARRANTY, THE WARRANTOR WILL PROVIDE ONLY A REPLACEMENT WATER HEATER OR PART THEREOF. THE OWNER IS RESPONSIBLE FOR ALL OTHER COSTS. Such costs may include but are not limited to:

a. Labor charges for service, removal, or reinstallation of the water heater or part thereof.
b. Shipping and delivery charges for forwarding the new water heater or replacement part from the nearest distributor and returning the claimed defective heater or part to such distributor except in the state of California where such charges are the manufacturer's responsibility.
c. All cost necessary or incidental for handling and administrative charges, and for any materials and/or permits required for installation of the replacement heater or part.

LIMITATION ON IMPLIED WARRANTIES

Implied warranties, including any warranty of merchantability imposed on the sale of this heater under state law are limited to one year duration for the heater or any of its parts. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

CLAIM PROCEDURE

Any claim under this warranty should be initiated with the dealer who sold the heater, or with any other dealer handling the warrantor's products. If this is not practical, the owner should contact: A. O. Smith Corporation, 5621 West 115th Street, Alsip, Illinois, 60803 (800) 323-2636. Canadian customers should contact A. O. Smith Enterprises, Ltd., P.O. Box 310-768 Erie Street, Stratford, Ontario N5A 6T3, (519) 271-5800.

The warrantor will only honor replacement with identical or similar water heater or parts thereof which are manufactured or distributed by the warrantor.

Dealer replacements are made subject to in-warranty validation by warrantor.

PROOF-OF-PURCHASE AND PROOF-OF-INSTALLATION DATE ARE REQUIRED TO SUPPORT WARRANTY CLAIM FROM ORIGINAL OWNER. THIS FORM DOES NOT CONSTITUTE PROOF-OF-PURCHASE OR PROOF-OF-INSTALLATION.

DISCLAIMERS

NO EXPRESSED WARRANTY HAS BEEN OR WILL BE MADE IN BEHALF OF THE WARRANTOR WITH RESPECT TO THE HEATER OR THE INSTALLATION, OPERATION, REPAIR OR REPLACEMENT OF THE HEATER OR PARTS. THE WARRANTOR SHALL NOT BE RESPONSIBLE FOR WATER DAMAGE, LOSS OF USE OF THE UNIT, INCONVENIENCE, LOSS OR DAMAGE TO PERSONAL PROPERTY, OR OTHER CONSEQUENTIAL DAMAGE. THE WARRANTOR SHALL NOT BE LIABLE BY VIRTUE OF THIS WARRANTY OR OTHERWISE FOR DAMAGE TO ANY PERSONS OR PROPERTY, WHETHER DIRECT OR INDIRECT, AND WHETHER ARISING IN CONTRACT OR IN TORT.

Some states do not allow the limitation or exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

IMPORTANT INFORMATION

Model Number_____

Serial Number_____

Installation Information

Date Installed_____

Company's Name_____

Street or P.O. Box _____

City, State, and Zip Code_____

Phone Number_____

Plumber's Name_____

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